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CHARLES P. STEINMETZ:
SCIENTIST and SOCIALIST
(1865-1923)

Including the Complete Steinmetz-Lenin Correspondence

by Sender Garlin

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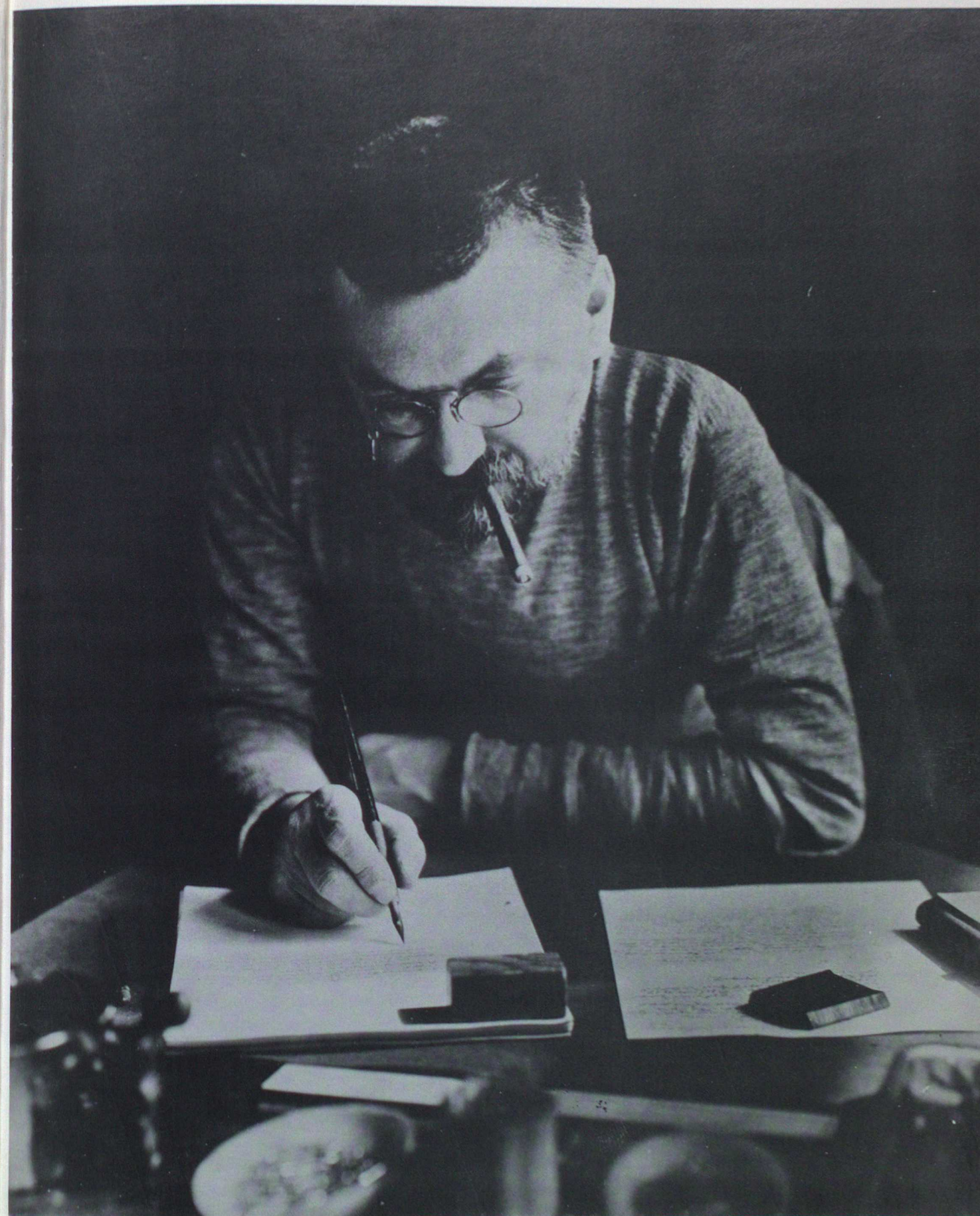
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CHARLES PROTEUS STEINMETZ

STEINMETZ: SCIENTIST AND SOCIALIST

Amidst the downward tendency and prone-
ness of things...will you not tolerate
one or two solitary voices in the land,
speaking for thoughts and principles not
marketable or perishable?

--Ralph Waldo Emerson

Two decades before the United States Social Security system was established in 1935, a guest lecturer addressed the Economic Club of Boston. "Social insurance--the provision for the old, the sick, the unemployed, ought somehow to be achieved," he said. "It should be charged to the overhead expense of industrial processes." The speaker was Charles Proteus Steinmetz, renowned electrical engineer and Socialist. (1)

Steinmetz was much sought after despite his unconventional political outlook. He was in demand, not only by local societies of electrical engineers, but by groups interested in his advanced social views acquired from the study of the writings of Karl Marx and Frederick Engels and--in his youthful years--Ferdinand Lassalle.

In 1913, two years prior to his Boston speech, Steinmetz had warned prophetically of the energy crisis we were to face in the Seventies. "Oil and natural gas will long have vanished," he wrote. "Indeed, they may be the first to go." Ultimately, he predicted, only one source of energy will be left, "and that is the energy of sunlight, for this is the greatest of all energies." Steinmetz was concerned about air pollution and the excessive (and wasteful) use of coal and gasoline. He believed that the electric car was the automobile of the future because "it runs cleanly and quickly and burns only rechargeable fuel." (2)

Even the briefest contact with Steinmetz, a contemporary observer said, "reveals a singular individuality and that of a very high order, a man of fine and ready mind and one crammed full of the passion for work...an individuality which combines authority in utterance with a remarkably childlike personal humility." (3)

* * *

Born on April 9, 1865, in Breslau, Germany (now Wroclaw, Poland), Steinmetz was christened Karl August Rudolph and confirmed in the Lutheran Church. (4) His father was an employee of the government railway in charge of preparing train schedules for the lithographer.

Steinmetz's grandfather, a German by birth, was an innkeeper in Ostrowo, not far from the Russian frontier, and had married a young Polish woman whose family name was Gawenska. Ostrowo was located in a part of Poland that had been acquired by Germany, the other beneficiaries to the dismemberment of the country being Austria and Tsarist Russia. (5) Karl's mother died when he was a year old, and he was reared by his Polish grandmother in Breslau. He was born with curvature of the spine, and when he grew to manhood, Steinmetz was barely five feet tall.

At the University of Breslau, where fellow students gave him the sobriquet "Proteus,"* Steinmetz studied mathematics, physics, chemistry, and astronomy, as well as economics and political science. During his student days he supported himself by tutoring and writing for German scientific publications. While editor of the illegal Socialist newspaper, the Breslau People's Voice, he attracted the attention of the authorities, who were zealous in their enforcement of repressive anti-Socialist laws promulgated by Bismark. As a result, he was forced to flee the country just as he had fulfilled requirements for his doctoral degree. He had completed work on his dissertation and it had been accepted. All that remained was the formality of confirming the degree, which Steinmetz never obtained.

From Breslau, Steinmetz traveled to Zurich, where he enrolled as a student of mechanical engineering at the Swiss Federal Institute of Technology--the Eidgenössische Technische Hochschule. The following year, when a fellow Socialist named Oscar Asmussen offered to pay his passage across the Atlantic, Steinmetz left Switzerland and journeyed to the United States.

* Because he could move from one field of intellectual inquiry to another with the greatest of ease.

Steinmetz arrived in New York on June 1, 1889, in the steerage section of the French liner La Champagne. He was twenty-four years old. Immigration officials were reluctant to admit him into the country. "His distorted body, his poverty, and lack of friends here made him liable to become a 'public charge,'" wrote McAlister Coleman, later a fellow Socialist. However, his traveling companion, Asmussen, assured officials at Castle Garden that he would look after his friend. Steinmetz was finally allowed to land. (6)

* * *

His writings in technical journals in Germany provided Steinmetz with his first contact in the United States. Ten days after he arrived he obtained a job with another German émigré, Rudolph Eickemeyer, in Yonkers, New York. Eickemeyer hired him as a draftsman at two dollars a day. Although his employer was an older man, Steinmetz later recalled, their tastes and work were practically the same. Eickemeyer, too, was one of the "dissatisfied" and had had to flee Germany after the Revolution of 1848.

When the newly-formed General Electric Company absorbed the Eickemeyer firm three years later, Steinmetz moved with it to Lynn, Massachusetts, where he remained for a year. In 1893 he was transferred to the GE plant in Schenectady. There he was to serve as chief consulting engineer until his death.

A GE official has described his first impression of Steinmetz:

I was startled and disappointed by the strange sight of a small, frail body, surmounted by a large head, with long hair hanging to the shoulders, clothed in an old cardigan jacket, cigar in mouth, sitting cross-legged on a laboratory work table. My disappointment was momentary, and completely disappeared the moment he began to talk. I instantly felt the strange power of his piercing but kindly eyes, his enthusiasm, his earnestness. His clear conceptions and marvelous grasp of engineering problems convinced me that we had indeed made a great find. It needed no prophetic insight to realize that here was a...man who, if given the opportunity, was destined to render great service to our industry. (7)

In 1892, three years after his arrival in the United States, Steinmetz read two papers before the American Institute of Electrical Engineers which solved a highly specialized technical problem that was impeding the technological development of the electrical industry.* This work brought him worldwide recognition at the age of twenty-seven.

Steinmetz's name is associated with various major achievements in electrical engineering. He developed a practical method for making calculations concerning alternating current circuits. (His three volumes on alternating currents have been basic references for years, and another work, Engineering Mathematics, was intended for high school students who planned to enter the electrical engineering profession.) Steinmetz evolved the theory of "electrical transients" which made it possible for engineers to understand the effects of lightning on high-voltage electrical transmission lines. Once one understands what lightning does to overhead wires, one can take measures to protect the generators and other equipment during a lightning storm. It was his feat in producing artificial lightning in the GE laboratory on March 2, 1922, which prompted journalists to call him the "electrical wizard," an appellation he heartily disliked.

While Steinmetz's inventions had none of the popular appeal of Edison's, he nevertheless solved hundreds of problems that had puzzled engineers for years in the designing of transformers, motors and generators, and in the distribution of electricity for greater distances at higher voltage. It is generally recognized that the expansion of the electrical industry during the first two decades of the twentieth century was made possible by Steinmetz. Thus, "A large share of the initial credit belongs to him for the progress made during his lifetime in the commercial application of electricity." (8)

The annual reports of the U.S. Patent Office from the turn of the century to 1923, the year Steinmetz died, contain repeated listings of his inventions. For 1900: "Steinmetz, Charles P., Schenectady, N.Y., assignor to General Electric Company. Regulation of dynamo-electric machines." The same year he assigned to GE another invention described as "a system of electrical distribution" and also a patent on "alternating current motive apparatus." There were eight Steinmetz

* The two papers on the mathematical law of magnetic hysteresis were hailed by contemporaries as doing for the magnetic circuit what Ohm did for the electric circuit.

patents that year alone, barely three years after he had gone to work for the company. The Patent Office listed Steinmetz's inventions almost every year. In 1910, for example, four inventions were recorded, each assigned to GE. A total of 195 patents were registered in Steinmetz's name. (Appropriation of an inventor's work by a corporate employer was, and continues to be, standard operating procedure.)

Steinmetz worked for GE for more than thirty years. The company built him a laboratory behind his Wendell Avenue home; he had free rein for his scientific projects, and GE was the technological and financial beneficiary of his genius. On numerous occasions the scientist indicated that the relationship suited him, for he found working for a large corporation preferable to employment by a small entrepreneur with limited means. In an article, "Socialism and Invention," Steinmetz wrote:

With the progress of the world's development towards organization into larger and larger corporations, steadily the number of independent engineers is decreasing, and more and more find it to their advantage to enter the employ of the corporations. In corporation employment of the engineer, it is, however, to a large extent the custom that the inventions made by the engineer, and the patents covering them, belong to the company, and not to the inventor, and the inventor derives no direct financial benefit from his individual invention. (9)

Steinmetz did not complain about this arrangement. On the contrary, he justified it, pointing out that

usually the problem which the engineer solved by his invention has been brought before him by his work for the company, and the data and information which enabled him to solve the problem to a considerable extent was made available by the corporation. The engineer's compensation, then, is his pay which covers the products of his knowledge as well as his originality and inventive skill.

Despite his advocacy of Socialism, Steinmetz's view of large corporations--and especially General Electric--was most tolerant. He was bounded by his

times and experiences, as well as the relatively limited size and nature of the GE of his day. Marxists believe that the technical and industrial development of capitalism facilitates the transition to Socialism. Some Socialists, especially prior to World War I, mistakenly took this to mean that the corporate form assisted this transformation, and Steinmetz reflected this outlook.

Evidently regarding the corporate unity from the viewpoint of the elite, he wrote in his book America and the New Epoch:

Of course the corporation organization is still crude and imperfect, and there are many chances to "get lost" or get into "blind-alley" positions... But, on the other hand, think of the positions of power, the big jobs that await the man of ability in large industrial corporations. And the man who gets into a blind-alley job does not have to stay there unless he wishes. If he has imagination enough to become discontented, he will soon move into a better job.* (10)

That Steinmetz was aware of his exceptional status is suggested in the Introduction to his America and the New Epoch:

When I landed at Castle Garden, from the steerage of a French liner, I had ten dollars and no job, and could speak no English. Now, personally, I have no fault to find with existing society; it has given me everything I wanted. I have been successful in professional engineering, and have every reason to be personally satisfied. The only criticism I can make is that I would far more enjoy my advantages if I knew that everybody else would enjoy the same.

At the same time, Steinmetz noted that "fear must be allayed, the economic problem must be solved, and the worker must be relieved of worry over possible sickness, unemployment and old age before his distinguishing human passion--creative achievement--can be expected to assert

* For more comment on GE's paternalistic policy and union organization, see Appendix A.

itself to any adequate degree." Gratified at his own good fortune, Steinmetz was nevertheless mindful of the "disadvantaged" millions, as they have come to be called. "There is a Turkish proverb," he observed in a magazine article, "that the world belongs to the dissatisfied.... For me the one great underlying principle of all human progress is that 'divine discontent' which makes men strive for better conditions." (11)

General Electric was aware of the monetary value of their genius--Socialist or no Socialist. A GE brochure reviewed their chief consulting engineer's early years in Bismarck's Germany most sympathetically. It reported that as a young man Steinmetz had interests outside the university curriculum. These interests, the GE publication observed, "were to alter profoundly the current of his life." The brochure went on to say that "at this time Bismarck was trying to stamp out Socialism in Germany; but with the enthusiasm of youth, a small company of students held secret meetings and discussed social problems." Young Steinmetz joined this group despite police orders to arrest "all persons who would dare to question Bismarck's course." (12)

* * *

Steinmetz's entry into practical politics came with the election in 1911 of George R. Lunn as mayor of Schenectady on the Socialist ticket. (13) (Pro-Socialist sentiment had been growing in the country; Eugene V. Debs was to poll 901,000 votes the following year as candidate for President of the U.S.) Immediately upon assuming office, Lunn named Steinmetz to the city's Board of Education, which, in turn, elected him its president.

Always interested in children, Steinmetz found that only one school building had been erected during the prior four years, and it was in one of the more remote areas of the city. More than three thousand school-children were without seats. When he assumed the presidency of the board, facilities for the retarded were nonexistent. During his term of office eight new schools were built and special classes for retarded as well as tubercular children established. Additional playgrounds became available. Doctors and nurses became an integral part of the school system. In 1912 Steinmetz provided a teacher for children with hearing problems.

Increasingly, Steinmetz encountered opposition from the Board of Estimate and Apportionment, which controlled the city's funds. In the next election--in 1913--he

announced his candidacy for the presidency of the Common Council. Election would have assured him a vote on the Board of Estimate and Apportionment. Steinmetz and the entire Socialist Party ticket went down to defeat as the result of a fusion combination. Two years later, however, the electorate swung back to the Socialist administration. Steinmetz became president of the Common Council, although he did not make a single speech, did not attend a single political mass meeting, and did not spend a cent on campaigning.

With the cooperation of the superintendent of schools, Dr. Abraham Brubacher, this is what Steinmetz accomplished:

- Provided sufficient school accommodations so that there were no more half-time pupils;
- Added thirty classrooms and started building for forty-six additional classrooms;
- Arranged for medical examinations by a staff of seven full-time nurses and seven part-time physicians;
- Introduced free textbooks in primary schools for all grades;
- Established ungraded classes to deal with English-language problems of foreign-born children;
- For the first time placed retarded and tubercular children in special classes where they could receive individual instruction;
- Set up special classrooms for undernourished children, with three meals a day, under the supervision of school nurses. (14)

During World War I, in the winter of 1917-18, Schenectady--along with many other American cities--experienced a severe fuel crisis. There was some sentiment in the Board of Education for closing the schools. Steinmetz opposed this move. No school would be shut down, he said, so long as a single place of public amusement remained open.

His educational philosophy is expressed in a statement made in 1921: "The teacher of the primary class is the most important person in the school system.

Upon her understanding of the child, upon her capacity to arouse interest in the child mind, upon the nature of her first few guiding steps, the future career of the child largely rests...." (15)

Steinmetz served on the Schenectady Common Council from 1916 to 1923, and on the Board of Education for three periods: 1912 to 1914, 1916 to 1918, and 1922 to the time of his death the following year.

In 1922, as candidate of the Socialist and Farmer-Labor parties for state engineer and surveyor (then an elective office), he polled 291,000 votes, half of them from New York City, and ran ahead of the ticket. In his campaign, he talked of harnessing Niagara and the development of water power on the St. Lawrence, the upper Hudson, and Delaware rivers. (16)

GE's benevolent attitude toward their chief consulting engineer evidently extended to the Schenectady Socialist administration. A contemporary student of Socialism in the U.S. reports the experience of David I. Nelke, editor of the anti-Socialist Catholic publication The Common Cause, when he called on Charles A. Coffin, GE president, in 1912, one year after the Lunn administration had taken office. Nelke, seeking GE support for his magazine, had turned up at the suggestion of Ralph Easley of the "class peace" National Civic Federation. During a stormy session, the GE official attacked various statements in The Common Cause and said that "as far as he [Coffin] was concerned, Dr. Lunn was the best man that had ever been mayor of Schenectady..." (17)

* * *

The Socialist administration Steinmetz had joined in 1911 included twenty-three-year-old Walter Lippmann. (18) Recommended to Mayor Lunn by Socialist leader Morris Hillquit (19), Lippmann became Lunn's executive assistant. He remained at his post only four months, however. Lippmann loftily wrote that "to me it always seemed that we were like Peer Gynt struggling with the unwatered hinterland of the citizens of Schenectady." (20)

When he summarized his experiences in the Socialist New York Call, he concluded that "the Socialist Party was definitely hampered by the lack of men who combined professional training with Socialist vision....There are plenty of people in this country bothering about playgrounds [a clear reference to Steinmetz's preoccupation with children]. These things are worth having, to be sure,

but why not let the 'Progressives' do them?"

Two months earlier, Lippmann's mood had been more sanguine. Describing the progress being made in Schenectady, he wrote in The Masses: "The Schenectady Health Department is preparing a system of records to follow the child from birth to the time he begins to earn a living. A maternity nurse has been appointed whose duty it is to teach expectant mothers the hygiene of the lying-in period and the care of the infant...." (21)

Many years later, Lincoln Steffens, in a letter to his wife, Ella Winter, wrote: "See that Walter Lippmann is back from his travels with Tom Lamont and is to have a column in the Herald Tribune. It will express Wall Street, I predict." (22) (Some time after Lippmann had begun writing his column, he received a congratulatory letter from William Allen White, editor of the Emporia, Kansas Gazette, which concluded: "Don't let the Bankers get you!") (23)

As for Mayor Lunn, he eventually parted company with the Socialist Party, after the organization had opposed some of his appointments. When Lunn switched to the Democrats in 1916 near the end of his term and was elected to Congress, Steinmetz functioned as acting mayor for about ten months. Later, Lunn served as lieutenant-governor under Alfred E. Smith and as a member of the Public Service Commission. In 1920 he appeared as a "cooperative" witness before the notorious Lusk Committee which initiated expulsion proceedings against five legally-elected Socialists in the New York State Legislature. (24)

* * *

From 1913 to 1917 Steinmetz was on the advisory council of the left-wing New Review. His associates on the council included Eugene V. Debs, Maxim Gorky, W. E. B. DuBois, Gustavus Myers, and Mary Heaton Vorse. Contributors ranged from moderate and left-wing Socialists to syndicalists. A contemporary report has it that at the end of the first year of publication, the right wing, which dominated the New York Socialist organization, officially banned the sale or distribution of the New Review at their public meetings.

In an article in the magazine entitled "Russia the Real Menace," Steinmetz called for the defeat of Tsarist Russia in the imperialist war of 1914-18. He argued that a victory for the Romanovs would lead

to the destruction "of all that Socialism has accomplished by a submergency under an autocracy based on the illiterate masses." (25) Another article by Steinmetz was apparently rejected by the editors of the New Review. This article discussed the sinking of the British liner Lusitania on March 7, 1915, off the Irish coast by a German submarine, with a loss of 1,153 passengers and crew, including 114 Americans. A warning to U.S. citizens taking passage on British vessels, signed "Imperial German Embassy," had appeared in the American press the morning the ship was scheduled to sail. The U.S. had not yet entered the conflict, and the episode created intense pro-war fever.

That Steinmetz had been asked to contribute to the New Review symposium on the Lusitania (26) is suggested by a copy of the article, "The Sinking of the Lusitania,"* which I found among the Van Vechten Papers in Schenectady with the scientist's notation in the margin: "For the New Review--not used." (27)

The sinking of the ship, Steinmetz wrote, was "a horrible atrocity." However, those who traveled on the ship "did so with their eyes open and of their own free will." He termed the Lusitania "an ammunition carrier." Subsequent historical researches have confirmed Steinmetz's assessment. A 1975 study states categorically that the overwhelming bulk of the vessel's freight consisted of munitions. The authors declared that "many neutral onlookers believed that the Lusitania was in effect an auxiliary cruiser of the British Admiralty." (28)

A recent British TV documentary, "The Sinking of the Lusitania," also referred to a very large cargo of munitions.

Steinmetz's unorthodox views on the Lusitania were later inferentially supported by Senator Robert M. La Follette, Sr., of Wisconsin. (29) Appearing before the national convention of the Nonpartisan League, a farmers' organization, in St. Paul, Minnesota, on September 20, 1917, La Follette charged that four days before the vessel was to sail,

* For text of article on Lusitania, see Appendix B.

President [Woodrow] Wilson was warned in person by Secretary of State [William Jennings] Bryan that the Lusitania had 5,000,000 pounds of ammunition on board, besides explosives; that the passengers... were sailing in violation of a statute of this country that no passenger shall travel on a railroad train or on a vessel which carries dangerous explosives. I am giving you some history that probably has not been given you before. (30)

* * *

Despite his reputation as an outspoken radical, Steinmetz was a popular speaker even during World War I, when he was often accused of "pro-Germanism" in the jingo press. In a three-column account of a lecture given in Fort Wayne, Indiana, the local newspaper reported that the city "had felt highly honored by the coming of this mastermind in the electrical world...." Steinmetz was quoted as saying, in words that only now are commonly uttered:

We have been a wasteful nation because of our great natural wealth. Nothing has been saved. We have lived in the today and never thought, nor prepared, for tomorrow. What have we been doing for years? We have been destroying our forests to get lumber in the most extravagant way. We have taken out crops year after year and never put anything back in the earth. There has been no such thing as conservation. It has been destruction. (31)

The press clipping file preserved for years by his secretary, friends, and associates discloses a wide response to his assertion, toward the end of 1922--when U.S. labor was experiencing a furious anti-union assault--that modern technology was capable of providing a universal four-hour day. All that is necessary, Steinmetz said, is the elimination of waste in our present industrial system:

You encounter waste everywhere. Two similar stores on opposite corners. Large sales organizations putting in long hours developing artificial needs. Factories working nights to supply

things that must be sold instead of bought. Shipyards turning out battleships whose only purpose is destruction. Waste and duplication of effort all around us. (32)

* * *

Steinmetz followed events in Soviet Russia with rapt and sympathetic interest. On February 16, 1922, he wrote to Lenin, offering his assistance in the electrification program then under way. Because of the unreliability of mail service between the United States and Soviet Russia, Steinmetz sent his letter via B. V. Losev, secretary of the New York branch of the Russian Technical Aid Society, who was returning to his homeland. When the scientist entrusted his letter to Losev, he observed: "It is a pity I cannot go with you....Let them know in Russia that I and many others sympathize with their aims, and that we are with them with all our hearts and minds."

Here is what Steinmetz wrote:

Dear Mr. Lenin:

Mr. B. V. Losev's return to Russia gives me the opportunity to express to you my admiration of the wonderful work of social and industrial regeneration which Russia is accomplishing under such terrible difficulties. I wish you the fullest success and have every confidence that you will succeed. Indeed, you must succeed, for the great work which Russia has started must not be allowed to fail.

If in technical and more particularly in electrical engineering matters I can assist Russia in any manner with advice, suggestions or consultation, I shall always be very pleased to do so as far as I am able.

Fraternally yours,
Charles Steinmetz (33)

Lenin received Steinmetz's message on March 31, 1922. On April 10, 1922, he replied:

Dear Dr. Steinmetz:

I thank you cordially for your friendly letter of February 16, 1922. I must admit to my shame that I heard your name for the first time only a few months ago from Comrade Krzhizhanovsky, who was chairman of our State Commission for Working Out a Plan for the Electrification of Russia and is now chairman of the State General Planning Commission. He told me of the outstanding position which you have gained among the electrical engineers of the whole world. (34)

Comrade Martens has now made me better acquainted by his accounts of you. (35) I have seen from these accounts that your sympathies with Soviet Russia have been aroused, on the one hand, by your social and political views. On the other hand, as a representative of electrical engineering, and particularly in one of the technically advanced countries, you have become convinced of the necessity and inevitability of the replacement of capitalism by a new social order, which will establish the planned regulation of economy and ensure the welfare of the entire mass of the people on the basis of the electrification of entire countries. In all countries of the world there is growing--more slowly than one would like, but irresistibly and unswervingly--the number of representatives of science, technology, art, who are becoming convinced of the necessity of replacing capitalism by a different socio-economic system, and whom the "terrible difficulties"* of the struggle of Soviet Russia against the capitalist world do not repel, do not frighten away but, on the contrary, lead to an understanding of the inevitability of the struggle and the necessity of taking what part in it they can, helping the new to overcome the old.

* These two words were written by Lenin in English.

In particular, I want to thank you for your offer to help Russia with your advice, suggestions, etc. As the absence of officially and legally recognized relations between Soviet Russia and the United States makes the practical realization of your offer extremely difficult both for us and for you, I will allow myself to publish both your letter and my reply, in the hope that many persons who live in America, or in countries connected by commercial treaties with the United States and Russia, will then help you (by information, by translations from Russian into English, etc.) to give effect to your intention of helping the Soviet Republic.

With very best greetings,

Yours fraternally,
Lenin (36)

* * *

In underscoring his support for the Soviet electrification program, Steinmetz obliquely indicted a system whereby the burgeoning electrical industry in the U.S. was highly profitable while, ironically, millions of American homes and farmsteads were without electrical power. When he made his offer to Lenin, the American scientist was aware of the crucial importance of electrification in industrializing Soviet Russia. "Anyone who has carefully observed life in the countryside, as compared with life in the cities," Lenin had declared in 1920, "knows that we have not torn up the roots of capitalism and have not undermined the foundation, the basis, of the internal enemy. The latter depends on small-scale production, and there is only one way of undermining it, namely to place the economy of the country, including agriculture, on a new technical basis, that of modern large-scale production. Only electricity provides that basis." (Emphasis added.)

Steinmetz was evidently aware of Lenin's classic slogan: "Communism is Soviet power plus the electrification of the whole country." If this aim

were not accomplished, Lenin pointed out, Russia would remain a small peasant country. "Only when the country has been electrified and industry, agriculture and transport have been placed on the technical basis of modern large-scale industry, only then shall we be fully victorious," the Soviet leader said in his report on the activities of the Council of People's Commissars to the Eighth All-Russian Congress of Soviets on December 22, 1920. (37)

Lenin continued his correspondence with Steinmetz. Some months after he had dispatched his first letter in response to the American scientist's offer of assistance, the Soviet leader wrote again. This letter, however, was not mailed. Instead, it was entrusted to Harold M. Ware, an American agronomist, who was returning to the United States. (38) The message was inscribed by Lenin on a photograph of himself:

To the highly esteemed Charles Proteus Steinmetz, one of the few exceptions to the united front of representatives of science and culture opposed to the proletariat. I hope that a further deepening and widening of the breach in the front will not have to be awaited long. Let the example of the Russian workers and peasants, holding their fate in their own hands, serve as an encouragement to the American proletariat and farmers. In spite of the terrible consequences of war destruction, we are going ahead, though not possessing to the extent of one-tenth the tremendous resources, for the economic building of a new life that have been at the disposal of the American people for many years. (39)

Describing his meeting with Steinmetz in Schenectady, Ware later wrote that the scientist "was tremendously pleased with the picture and the expression of comradeship it carried." Ware reported that Steinmetz at once "began to probe me for first-hand information on Russia." When Ware said his experience was largely among the peasants, Steinmetz replied that that was precisely what he was interested in. "There is no reason why Russia cannot carry out her electrification slowly," he told Ware, "but I hope America, Germany, etc., will help." (40)

Steinmetz placed Lenin's photograph on the wall of his GE laboratory and proudly pointed it out to sympathetic as well as unsympathetic visitors.

There is an engaging sidelight on Lenin's initial response to Steinmetz's offer of assistance. On the day he received the scientist's letter, Lenin turned it over to G. M. Krzhizhanovsky, chief of the electrification program, with this message:

I enclose what I have received today. I remember you telling me about Steinmetz that he is a world figure. Before you told me about him I had never heard his name.... Shouldn't I make some practical proposition in my reply? After all, he has offered his assistance. In view of this, shouldn't I specify some concrete types of assistance? (Emphasis in original.) Have all the works on electrification been sent to him? Do you think it worth publishing his letter and my reply? Please return the enclosure and this letter with your advice. I think I should also consult Martens. We must give more thought to the best way of replying.

Yours,
Lenin (41)

According to Jessica Smith, writing in New World Review, Lenin's first letter had not reached Steinmetz, and it was Harold Ware who brought a duplicate copy to the scientist's laboratory in Schenectady. In her graphic account, she notes that Steinmetz did receive reports of the State Commission for Electrification from Lenin. On the basis of these reports, Steinmetz described the Soviet electrification plan in the September 30, 1922, issue of Electrical World and closed with an appeal for American aid in carrying out this program. (42)

Describing Fred Biedenkapp's speaking tour on behalf of Russian orphans, the magazine Soviet Russia reported that while in Schenectady he had sold ten shares of stock of the Russian-American Industrial Corporation (43) at ten dollars each, to "Charles P. Steinmetz, the internationally known inventor, who took the occasion to endorse the work done toward reconstruction of Russia's economy." (44)

One of the fascinating, hitherto-unpublished documents which I found in Schenectady was a letter from Harold Ware, dated August 4, 1923, barely three months before Steinmetz's death.* Here, Ware sought Steinmetz's help in a project aimed at interesting American industrialists in providing Soviet Russia with tractors on credit. The plan, as described by Ware, had been worked out in cooperation with Frank P. Walsh, prominent Kansas City, Missouri, attorney and chairman of the U.S. Commission on Industrial Relations from 1913 to 1915.

* * *

Early in July of 1923, Steinmetz had agreed to join an advisory committee to aid the Kuzbas mining colony in Siberia. (45) Other Americans on the committee were James H. Maurer, president of the Pennsylvania State Federation of Labor (46), Walter N. Polakov, economist, and Roger N. Baldwin, of the American Civil Liberties Bureau (later the American Civil Liberties Union). The Times was accurate in its statement that the Kuzbas colony consisted of five hundred Americans, but it incorrectly reported that the group was operating under "a valuable coal mining concession." (47)

A number of Americans in the colony had broken their two-year contracts and returned home. Writing from Kemerova, Siberia, Ruth Epperson Kennell reported that some had become disillusioned because "they came with misconceptions of the project, gained from inaccurate information." Others, she wrote, had arrived "with sentimental illusions concerning our importance in Russia."

It was in response to a concerted press campaign aimed at discrediting the Kuzbas experiment that Steinmetz accepted membership on its advisory committee. He wrote:

I am very much interested in Kuzbas and hope much from it. Everybody taking an interest in the enterprise knows, or should know, that it is the creation of a better world in which he is taking part, but that he goes out

* For the text of the Ware letter, see Appendix C.

into a field where he must expect hardships and disappointments, and where he must organize and create. There are always a few people who imagine that in such an enterprise they will drop into a safe berth and have a good and easy time, and then get disappointed and come back and throw mud after they have met reality. (49)

Steinmetz also served on the board of Soviet Russia Pictorial, together with William Z. Foster, Ella Reeve Bloor, Upton Sinclair, J. Louis Engdahl, Henry Wadsworth Longfellow Dana, Elizabeth Gurley Flynn, Paxton Hibben, Helen Keller, Albert Rhys Williams, and Mary Heaton Vorse. The publication, official organ of the Friends of Soviet Russia and the International Committee for Workers Aid (later Workers International Relief), told the story of Russia's progress, as well as its problems, and raised funds to aid the victims of the famine along the Volga in the Twenties.

One issue of the magazine acknowledged a contribution of \$140 from Steinmetz; \$18 from Socialist leader Eugene V. Debs, then convalescing in a sanatorium in Elmhurst, Illinois; and \$28 from the famed opera singer Alma Gluck. (50)

Because of his correspondence with Lenin, Steinmetz incurred the displeasure of one of the early redbaiters. In a curious mélange entitled Reds in America, the author, after noting that Steinmetz "had for many years been known as an enthusiastic intellectual Socialist," proclaimed:

Whenever a college professor, a government official, a big businessman, or any individual whose name carries distinction in any line of endeavor, expresses an opinion that can be construed as favoring, even in a limited sense, the aims of the Communists, such words are seized upon and used for propaganda purposes....Thus it is that the correspondence between...Charles P. Steinmetz, the electrical genius, and Lenin was broadcasted throughout the English-speaking world and was translated in many languages. It was given out by Lenin. (51)

An early biographer, also commenting on the Lenin-Steinmetz correspondence, was more amiable. But, while the lyrics were different, the music was the same. "The incident," wrote J. W. Hammond, "did not add to the prestige of Dr. Steinmetz in the opinion of many persons who fail to sympathize with the Soviet point of view. They were quick to criticize his action, which led them to consider Steinmetz as more of a visionary than a practical idealist, and in any event a man whose political and social views were far from safe."

"Yet," Hammond observed dolefully, "Dr. Steinmetz quietly continued his interest in Russia and Russian events to the very last." As evidence, he cited Steinmetz's contribution of \$250 he had received for a magazine article toward purchase of tractors for Soviet farm development. (52)

That Steinmetz's interest in the progress of Russian reconstruction was not ephemeral is attested to by his Introduction to A. A. Heller's book The Industrial Revival in Soviet Russia (53), published the same year in which he had written to Lenin. (54) Political democracy, Steinmetz noted, has not solved the social problem, "and never will." He recalled that "the first scientific approach to the problem is the work of Marx, half a century ago." Socialism, Steinmetz wrote, is

a society free from unsocial acts, thus is identical with that of Christianity as taught by Jesus. The difference is that Christianity endeavored to bring about this condition by inculcating brotherly love into all members of human society, and the experience of nineteen centuries has proven that self-interest is stronger than brotherly love. Socialism abandoned the hope of changing human nature and eliminates unsocial acts by reorganizing society so that self-interest becomes identical with public interest, that is, by eliminating those conditions under which self-interest is opposed to public interest.

Commenting on the years immediately following the Bolshevik Revolution, Steinmetz's words are prescient in light of subsequent events: "There was no previous experience to guide, nobody could foresee many of the happenings, and much which was done had to be done over again; might have been done differently, if the future could have been known." (Emphasis added.)

In addition to books and articles on scientific subjects, Steinmetz wrote for the nationally circulated magazines from which he received fees, and for Socialist and labor publications from which he neither sought nor expected payment. His byline appeared frequently in Collier's, Harper's, the American Magazine, Review of Reviews, Good Housekeeping, Survey, Ladies' Home Journal, and The Nation, as well as the left-wing New Review and the Socialist New York Call. He often addressed letters to editors of newspapers in Schenectady and Albany, which were always featured. Most of these communications dealt, not with problems of electricity, but with current social and political issues.

Steinmetz's interests outside the scientific field were boundless: history, literature, photography, gardening, boating, nature study, motoring and cycling. He liked best the picturesque ride on the old roads to Lake George, sixty-five miles from Schenectady. Perhaps above all, city historian Larry Hart has written, Steinmetz loved the frequent excursions to his unpretentious camp on Viele's Creek, a tributary of the Mohawk River not far from his home. Much of his technical work was done there, either while he was drifting alone in a canoe or seated cross-legged before the rough plank table on the porch of his shack.*

One day, on a train en route to Salt Lake City, Steinmetz heard a tap on his compartment door. The caller was William Jennings Bryan, frequent candidate for President of the United States, and a much-publicized Fundamentalist. The meeting was most cordial despite the two men's sharply opposing views on religion. Anticipating Clarence Darrow's famous

* The camp was dismantled in 1930 and moved to Henry Ford's Dearborn, Michigan, "Americana" museum, where it was reassembled.

joust with Bryan at the "Monkey Trial," (Dayton, Tennessee, 1925), Steinmetz told Bryan he could not believe anything he could not prove. His scientific training and mode of thinking had made this imperative, he said.

On another occasion, in a talk to a church audience in Schenectady, Steinmetz asserted: "There is no evidence outside of science for God, immortality, and similar conceptions. There is evidence against these conceptions in science, and science has justified its methods and conclusions by the work it has done." (55)

Not long after his arrival in Schenectady, Steinmetz was invited to join the faculty of Union College, where he served as professor of electrical engineering and electrophysics from 1902 to 1923. (The college later awarded him an honorary Ph.D., and there is a Steinmetz Hall at Union.) Steinmetz divided his time between the college and his GE laboratory. His large, red-brick home near the college was surrounded by wide lawns and a bit of woodland. Behind the house was the scientist's private laboratory and a glass conservatory where he grew orchids and other exotic plants.

Steinmetz never married. He legally adopted as his son and heir a young engineer, J. LeRoy Hayden.* When Hayden married Corinne Rost, the young couple made their home with Steinmetz. The children born to the Haydens--Joseph, Margaret, and William--became Steinmetz's foster grandchildren. To all of them, including Mr. and Mrs. Hayden, he was "Daddy," and so he always signed his letters and postcards to them when on lecture tours.

Although he owned two electrically-powered automobiles, Steinmetz preferred to board the "workmen's trolley" at Rugby Road and Wendell Avenue, which took him straight to GE's main gate.

Interviewed by a reporter for a Michigan newspaper, he listed among his favorite books: Homer's Odyssey,

* The elder Hayden died August 12, 1951, at the age of 70.

Goethe's Faust, Horace's Odes and Other Poems, Stevenson's Treasure Island, Mark Twain's Tom Sawyer and Adventures of Huckleberry Finn, and Theodor Mommsen's The History of Rome.

He liked to cook and knew how to prepare a good meal. This skill became widely known, and one day he received a letter from a New Yorker requesting Steinmetz's recipe for meat loaf. The scientist responded with a detailed letter and his recipe on July 17, 1922.

There are countless stories about Steinmetz, many of them untrue. The most popular and persistent is that he once refused to work in his GE laboratory because of a "No Smoking" sign. According to legend, he quietly departed, saying, "No smoking, no Steinmetz." Some light is cast on the "no-smoking" issue by August Claessens, a well-known Socialist propagandist of the time, and former New York State assemblyman, who had visited him in Schenectady.

"All around the laboratory I saw signs, 'No Smoking,'" Claessens recalled in his informal autobiography. Seeing the scientist puff away at one of his favorite Blackstone panatellas, Claessens politely sought an explanation. "Steinmetz took out his cigar for a moment and whispered to me, 'You see, my good comrade, my boss is understanding: 'No smoking, no inventing.'" (56)

Finding it difficult to take notes fast enough while a student in Breslau, Steinmetz had developed his own system of shorthand which he used throughout his life. The method is a blend of several systems, chiefly the Swedish Arenda, with modifications which he had devised. Its underlying principle is phonetic. After he had been using the method for a number of years, he offered it for publication as a book to Harper & Brothers. Four years earlier they had published his America and the New Epoch. The manuscript was rejected on August 10, 1920, with a letter which bore no signature, only the name of the firm: "The general opinion seems to be that your system is difficult to master, and that while it might be readily understood and acquired by people of superior intelligence, it would on that account hardly appeal to the general public upon which we have to depend for a large sale."

On September 1, 1923, Steinmetz began a trip to California. He had been invited to be chief speaker at the Pacific Coast convention of the American Institute of Electrical Engineers in Del Monte, California. (The Haydens traveled with him at his suggestion.) Along the return route he gave lectures to scientific groups in various cities. The trip proved more taxing than either he or members of his family had anticipated. Soon after reaching home on October 13, 1923, he fell ill. He was ordered to bed, but doctors emphasized that his condition was not serious. "Dr. Steinmetz Just Resting," the New York Times headlined its report from Schenectady, and went on to say:

There is no need for alarm over the condition of Dr. Charles Steinmetz, the inventor's physician announced this morning, denying the authenticity of reports that Dr. Steinmetz is ill. The physician said he is but resting up in bed after a somewhat too strenuous trip to the Pacific Coast. The doctor said that the only difficulty was to keep the patient in bed, Dr. Steinmetz being anxious to get up and go about perfecting his present pet project-- development of generators of man-made lightning. (57)

Four days later the scientist was dead, despite this optimistic prognosis. He was fifty-eight years old.

A local newspaper reported:

Death came suddenly today to Charles Proteus Steinmetz, the "wizard" of electricity, while he was alone in his sick room, which he was counting on leaving soon, so far had his recovery progressed. The scientist slept most soundly last night of any night since the breakdown which sent him to bed following his recent trip to the Pacific Coast. He asked his nurse to have his breakfast served to him in bed, and she left the room to have the meal prepared. William Hayden, one of his adopted grandchildren,

entered the room a short time after 8 o'clock with the breakfast and found the scientist dead.

The physicians issued this medical bulletin: "Dr. Steinmetz died suddenly a few minutes after 8 o'clock this morning of acute dilation of the heart, following a chronic myocarditis of many years' standing, which is a weakening of the heart muscles." The same newspaper in which the medical bulletin appeared informed its readers that, while Steinmetz was rumored to have received one of the largest salaries ever paid to an electrical expert, "his friends say he left a very modest fortune. In fact, it was said he was not on the payroll of General Electric, but that the company paid all of his living expenses and that of his experiments. He held that sufficient."

A New York Times dispatch from Schenectady reported that the only insurance Steinmetz carried was a policy for \$1,500 provided by GE (58) and that the principal sum would be paid to his half-sister, Clara. This was in addition to \$1,000 to a younger half-sister, Margarethe Machie of Breslau, "if she be living." Contrary to other newspaper stories about the scientist's fabulous salary, probate of his will disclosed that the estate was insufficient to cover bequests totaling \$25,500. (59)

Steinmetz's death was marked by solemn but simple rites. The service was conducted by an old friend, Reverend Ernest Caldecott, pastor of the Unitarian Church of Schenectady. Steinmetz's half-sister, Clara, his adopted son, LeRoy Hayden and family, and a few intimate friends attended the half-hour service in the Wendell Avenue home, while outside five hundred gathered. City schools and Union College were closed for the day; city and county offices and many business establishments were shut down for half a day.

For four hours unbroken lines of people filed past the bier as it lay in the flower-filled room of the Steinmetz home. Representatives from the city government, the schools, Union College, and several industries (as well as groups of children), came to pay final homage to a man "known inter-

nationally for his development of electrical energy, and locally as a good citizen," as the New York Times put it. (60) At Vale Cemetery more than 1,500 gathered to pay their final respects. Honorary pallbearers included Owen D. Young, chairman of the board of General Electric; Gerard Swope, president of GE; and Dr. Charles A. Richmond, president of Union College.

An eloquent tribute came from a fellow-scientist and Socialist, Professor Vladimir Karapetoff, of the Cornell University School of Electrical Engineering. (61) Steinmetz, Karapetoff wrote in the Cornell Daily Sun, belonged to a political party which "cussed his company [GE] and its principal customers for years." He described Steinmetz as "modest, thoughtful, a prodigious worker....His contribution to our welfare and our knowledge is beyond measure or computation, and his life is a shining example of a quiet, straight, and unswerving path amidst the turmoil of conflicting positions, avarice, pseudo-science, pseudo-patriotism, and pseudo-life itself...." (62)

Critics of contemporary capitalist society who have achieved eminence in their chosen fields are frequently the targets of ideological adversaries who seek to explain away their advanced social views as something alien to their "true calling." Thus, following Steinmetz's death, the New York Times proclaimed: "As an engineer, Steinmetz started with a thorough training, while as a publicist and economist, he had none at all." (63)

This appraisal is refuted by the obituary on Steinmetz that appeared in the very same newspaper five days earlier. There, Times readers were informed that, in addition to his studies of mathematics, chemistry, and electrical engineering, Steinmetz "was deeply interested in politics and economics and became an active Socialist at a time when the German government under Bismarck was taking drastic steps to stamp out Socialism." The obituary also noted that Steinmetz had been a leader of several Socialist clubs and editor of Socialist publications. (64)

Some years after Steinmetz died, Governor Herbert Lehman signed a bill establishing his residence as an historic site. In 1938, however,

after much wrangling in the New York State Legislature over the needed appropriations, the Steinmetz home was torn down. Today a simple marker is all that remains.

* * *

Newspaper writers had placed Steinmetz's annual earnings at between \$25,000 and \$100,000. However, when I interviewed the scientist's foster grandson, Joseph Hayden, in Schenectady, Hayden said he doubted that the figure ever exceeded \$25,000, "if that." Taking time out from work in his photocopy shop near the Schenectady bus station, Mr. Hayden reminisced about Steinmetz, told of his great love for children, and of his special devotion to the three foster grandchildren.

"The Doctor wanted very much for me to become an electrical engineer, but I just couldn't make it at Union College. When I changed my major, I saw that he couldn't hide his disappointment. He was always very patient and understanding, as well as entertaining. When we were kids, he used to drop everything he was doing, even interrupting a visit with old Henry Ford once to tell us a bedtime story. We accompanied him to our camp on weekends where he cooked all the meals and we set the table and washed the dishes. He always found time to help us with our homework. People from all walks of life were always amazed at how he could discuss anything." (65)

And Mr. Hayden's sister, Margaret, interviewed by GE News, a company house organ, 40 years after Steinmetz's death, reminisced: "I remember that he had a firm conviction that everyone should be treated with respect and kindness." She implied that chauvinistic terms "were bandied about on the playground at school, but the first time I tried one of these at home my grandfather scolded me severely and explained that such talk was disrespectful, and furthermore, it might hurt someone." (66)

* * *

Cecile Rhein was Steinmetz's last secretary. She was approaching her ninety-fifth birthday when we talked about the great scientist and social thinker in her modest apartment in a working-class section of Schenectady. When she learned that she might become Steinmetz's secretary, she was apprehensive. "I expected to see a tall, imposing,

forbidding individual. Instead, there was this very kindly little man who later proved to be so thoughtful and considerate, not only of me, but of all people with whom he came in contact."

The only condition Steinmetz set for her employment, Miss Rhein said, was that she master the personal system of shorthand in which he wrote his notes. "I began studying his system and quickly learned it. On the margins of letters Steinmetz wanted answered, he would often write this instruction: 'Write a nice letter, not too long, not too short.' He used to say, 'All I want is good work; never sacrifice accuracy for speed.' He always said, 'What's new?' when he came through the door each morning." (66) (Interviewed years earlier by Larry Hart, Miss Rhein had told how Steinmetz was "always neat in his attire; he wore gray suits and often a turtleneck sweater. His hair was cut in semi-brush style, his beard always carefully trimmed.")

Because of his deformity, Miss Rhein explained, Steinmetz seldom used the expensive leather chair GE had provided. He preferred instead to kneel on a chair or stool when working. The floor of his laboratory was never waxed, she said, because of the danger that he might slip and injure himself.

"When the Doctor died, GE wanted to dispose of the newspaper clippings about him that I had collected and arranged in chronological order. No space, they said. So I asked if I could take the clippings away, and they agreed.* I put them in cartons and kept them under my uncle's upright piano for more than thirty years." (67)

Several weeks after this interview--on November 29, 1976--remembering that it was her ninety-fifth birthday, I telephoned Miss Rhein from New York to offer my congratulations. We chatted again about her boss, and about the razing of the Steinmetz home, and how it could have served as a facility for the elderly. "Not for me," she hastened to say, "but for those who need such a place more than I. The Doctor had such a beautiful greenhouse, with orchids, and now everything is overgrown with weeds. It's really a shame." (68)

* The clippings are now in the Schenectady City History Center and the Research Library of the Schenectady County Historical Society.

* * *

Many have visited Steinmetz's burial place. A photo in an Albany newspaper showed Eugene V. Debs placing a wreath on the grave. The caption under the picture described Debs as "a personal friend" of Steinmetz. (69)

* * *

In his obituary on J. Robert Oppenheimer in the New York Times, Alden Whitman wrote that the nuclear scientist "was 'beset by the moral consequences of the atomic bomb' he helped to create, which he told fellow-physicists 'dramatized so mercilessly the inhumanity and evil of modern war.'" (70) Unlike Oppenheimer, Steinmetz did not have a troubled conscience about his scientific achievements. He evidently did not believe his inventions were harmful to mankind. And he was justly proud of the fact that--unlike many of his scientific contemporaries--he took advanced positions on the crucial social issues of his time.

* * *

On December 23, 1923, two months after Steinmetz's death, General Electric issued its annual report. (71) In its "Condensed Profit and Loss Account," the company informed its stockholders how business had been during fiscal 1923, and it wasn't at all bad: "Net sales billed--\$271,309,695.37; profit available for dividends--\$33,525,118.32; surplus at December 31, 1923--\$82,762,095.65." The stockholders, however, had to be told about one other aspect of corporate affairs:

"Dr. Charles P. Steinmetz died on October 26, 1923, after thirty years of devoted service with your company." (72)

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APPENDIX A

GE's Paternalistic Policy and Union Organization

"The possibility of moving into a better job," as Steinmetz put it, doubtless applied to him and other gifted scientists who were economically valuable to their employers, but not to the average employee at GE. It is worth noting that Local 301 of the United Electrical, Radio and Machine Workers (UE) did not win collective bargaining rights in Schenectady until December 16, 1936, although thirty craft locals organized in the Electrical Industry Trades Alliance had negotiated with GE with varying success in previous years.

UE leader James Matles (1909-1975), in dissussing the company's paternalistic policy as reflected in its "labor code" (GE Q105A), conceded that the code outlined issues spelled out in a union contract; it set forth prevailing GE policies on wages, hours, overtime, vacations and employment conditions in the shop. The "code" also declared that "there shall be no discrimination by foremen, superintendents or any executives of the company against any employee because of race or creed or because of an employee's membership in any fraternity, society, labor, or other organization."

Steinmetz, Matles pointed out, "could be a Socialist or anything 'lawful' that he pleased. As long as he was valuable to GE--his genius made millions for the company--he would be kept on the job. The no-discrimination clause in GE's Q105A established the same principle for all employees." (73)

During the McCarthyite era, however, GE management actively joined in driving from their jobs scores of employees with many years of service. These trade unionists had invoked the protection of the Bill of Rights of the U.S. Constitution and had refused to submit to the inquisitors.

--S.G.

APPENDIX B

The Sinking of the Lusitania*

By Charles P. Steinmetz

It was a horrible atrocity, just as horrible as every act of war, and far worse horrors have occurred, and are occurring daily in the trenches and on the battlefield, without causing a ripple in public sentiment. Some horrors will continue and increase until war is swept out of existence by a reorganization of society, which makes war useless and thereby unnecessary.

These passengers who embarked on the ammunition carrier Lusitania did so with their eyes open, after repeated warnings and of their own free will but those tens of thousands of Russians who slowly sank to death in the mire of the Masurian Lakes; those English, German, French, who daily are slaughtered in the trenches, are there not by their free will but by military law, or have been forced to "voluntarily" enlist to escape starvation by unemployment.

Hundreds of thousands of innocent women and children have starved to death on the plains of Poland without stirring the sentiment of the humanitarians. What, then, is the difference? Amongst those who went down in the Lusitania were some of America's highest nobility, and if the submarine blockade should become fully effective and stop our commerce with England, it would be a severe blow to America's most profitable business of manufacturing supplies and ammunition.

Schenectady, N. Y.
May 18, 1915

* Unpublished article prepared for the New Review.

APPENDIX C

Letter from Harold M. Ware
to Charles P. Steinmetz

41 Washington Square South
New York City
August 4, 1923

Mr. Charles P. Steinmetz
Schenectady, New York

Dear Mr. Steinmetz:

Last Spring, when I delivered Comrade Lenin's letter and photograph to you, I told you that I was interested in developing tractor farming in Russia. Since then I have made a trip through the agricultural states from North Dakota to the Gulf, and subsequently a trip to the larger tractor manufacturers for the All-Russian Agricultural Exhibition now being held in Moscow. These contacts, plus my Russian experiences, are the basis of the proposed plan which was worked out with Frank P. Walsh.

My Russian experience taught me this: (a) tractors are essential to the reconstruction of Russian agriculture but a demand from the Russian farmers themselves must be created; (b) that the work we started at Perm of teaching Russians to operate them is the only sound plan. That we must measure our success by the rapidity with which Russians replace Americans, not only in operation of machinery, but in management of large-scale farming fitted to American machinery; (c) that Russia has no money to finance these educational farms and that the relief organizations are unsuited to the task; (d) that whatever plan is followed, it must be put on an economic basis, paving the way and affording inducements to American capitalist manufacturers to advance the essential CREDIT: [emphasis in original]; (e) lastly, it cannot succeed without an initial nucleus of young, strong and expert tractor farmers and mechanics with trained agricultural direction. And some responsibility and compensation must be offered to them. The unit which I took to Russia, with a

few additions, fills these personal requirements. A representative of the group visited the Ukraine and in conversations with the officials quoted was assured that they would cooperate.

The American manufacturer is 'from Missouri,' i.e., they want to see the tangible 'red seal,' etc. Some of their representatives are in Moscow at the Agricultural Exhibition; all are anxious for business and all are timid about starting. In order to get a definite offer I am going back to Russia this month, probably on the 18th.

You said you were interested in the peasantry, in anything which affected them as important to the continuation of the Russian experiment as a whole. I feel that every tractor put into operation becomes a tremendous force to that end. And every Russian soldier and peasant taught to operate a tractor becomes, by the mere preaching of the gospel of tractor-farming in the villages, a factor in revolutionizing agriculture. Which, after all, is the ultimate stage of the Revolution.

Comrade Lenin was good enough to compliment the boys on their work at Perm last year. Most of them are participating in this project. They have little money, but their experience wore off the edge of adventure which drew them originally to Russia, and they have continued because they felt that they were doing valuable and constructive work for the first time in their lives.

Any help that you can give us will be invaluable. I would appreciate any criticism and suggestions you make upon the plan that would tend to make it more palatable to the American capitalist. Also, if you have any message you would like delivered personally in Moscow, I am at your service.

Cordially yours,
Harold M. Ware

REFERENCES AND BIOGRAPHICAL NOTES

1. Boston Globe, January 12, 1917.
2. Larry Hart, in Schenectady and the Golden Era.
3. Joseph Baker, in Scientific American, May 6, 1911.
4. Nonetheless, Steinmetz is listed in the Standard Jewish Encyclopedia, the Universal Jewish Encyclopedia, and Judaica.
5. Hammond, Charles Proteus Steinmetz, pp. 8, 9.
6. Coleman, Pioneers of Freedom, p. 265.
7. E. W. Rice, in Science, November 16, 1923.
8. Broderick, Steinmetz and His Discoverer, p. 14.
9. Review of Reviews, January 1920.
10. A Columbia University sociologist, Bernhard J. Stern (1894-1956), contended that capitalism acts as a brake on scientific initiative. Dr. Stern, a Marxist scholar, cited the "shelving" of patents by giant corporations for the purpose of stifling competition. Many technological innovations have been suppressed, he argued, "because changes may disturb profits." See "The Frustrations of Technology," Science & Society, Winter 1937, pp. 3-28.
11. American Magazine, May 1918.
12. Clyde Wagoner, in the Schenectady Indian, July 1950.
13. George R. Lunn (1873-1948), a native of Iowa, came to Schenectady as pastor of the First Dutch Reformed Church in 1904. His sermons, attacking national as well as local evils, brought him increasing attention and led to his nomination for mayor of Schenectady.
14. Bibber, Charles Proteus Steinmetz, pp. 13-14.
15. Bibber, p. 14.
16. Coleman, p. 218.

17. Weinstein, p. 109.
18. Walter Lippmann (1889-1974), author and political commentator, was a classmate of John Reed at Harvard and one of the founding editors of The New Republic. During World War I he left the magazine to serve as an assistant to Secretary of War Newton D. Baker (1917), and as captain in the U.S. Military Intelligence (1918). Later he was employed as an editorial writer on the New York World, and finally as a syndicated columnist on the New York Herald Tribune.
19. Morris Hillquit (1870-1933), a lawyer, was a leader and theoretician of the Socialist Party in the U.S., a member of its national executive committee, and for many years its representative to international conferences. Hillquit, in his autobiography, Loose Leaves from a Busy Life, says that Lippmann spent two years in Schenectady. Lippmann served in the Lunn administration only four months.
20. Lippmann, A Preface to Politics, p. 183.
21. The Masses, April 1912.
22. Winter and Hicks, The Letters of Lincoln Steffens, Vol. 2, p. 908.
23. Johnson, The Letters of William Allen White, p. 324.
24. Lusk Committee Hearings, Vol. 1, pp. 352-366.
25. New Review, December 1914.
26. The symposium appeared in the June 1, 1915, issue of the New Review. Contributors included Eugene V. Debs, Gustavus Myers, Rose Pastor Stokes, and Robert H. Lowie. The general tenor was expressed by Debs, who declared, "Prussian militarism has gone stark mad."
27. Hawley B. Van Vechten (1885-1960) was editor of the Socialist Schenectady Citizen from 1917 to 1936, and served as city clerk of Schenectady from 1912 to 1913. The Van Vechten Papers are at the Schenectady City History Center.

28. Bailey and Ryan, The Lusitania Disaster, pp. 96, 233.
29. Robert M. La Follette, Sr. (1855-1925), represented the state of Wisconsin in the U.S. Senate for many years. He campaigned against the trusts and monopolies on behalf of farmers and small business.
30. La Follette, Vol. 2, p. 767. Senator La Follette's St. Paul speech precipitated an unsuccessful campaign to expel him from the U.S. Senate. Reference to the speech is missing from the paperback edition of La Follette's Autobiography issued in 1968 by the University of Wisconsin Press, with a foreword by Allan Nevins.
31. Fort Wayne, Indiana, Journal-Gazette, May 24, 1917.
32. Syndicated story, NEA (National Enterprise Association), October 13, 1922.
33. Published in the Soviet press April 19, 1922. The present letter is from Lenin Through the Eyes of the World. Steinmetz's letter, together with Lenin's reply, also appeared in the Foreign Relations Section of The Nation, July 19, 1922.
34. Gleb Maximilian Krzhizhanovsky (1872-1959). At Lenin's suggestion, in 1920, he headed the Commission for the Electrification of Russia.
35. Ludwig Karlovich Martens (1875-1948), a prominent Russian engineer, was Soviet representative in the U.S. from 1919 to 1921. After an unsuccessful attempt to normalize relations with the U.S. he was expelled and returned to Soviet Russia, where he became a member of the Presidium of the Supreme Economic Council.
36. Lenin, Collected Works, Vol. 35, pp. 552-553. Published in Pravda, April 19, 1922.
37. Lenin, Collected Works, Vol. 31, p. 516.
38. Harold M. Ware (1895-1935), American agronomist and Communist, was the son of Ella Reeve Bloor, prominent U.S. Communist leader. Ware came to Soviet Russia in 1922 as leader of a tractor brigade he had organized in the U.S. The 24

- tractors he brought were purchased with funds contributed by Americans sympathetic to Russian reconstruction. The team headed by Ware worked on the Toikino State Farm, in Perm Gubernia. Their work was publicly praised by Lenin in a message to the Presidium of the All-Russia Central Executive Committee on October 24, 1922.
39. Lenin, Collected Works, Vol. 45, p. 597. First published in English in Soviet Russia Pictorial, July 1923.
40. Soviet Russia Pictorial, July 1923.
41. Lenin on the United States, p. 578.
42. Jessica Smith, in New World Review, Winter 1970. Also in a paperback entitled Lenin's Impact on the U.S., New York: NWR Publications, 1970.
43. The Russian-American Industrial Corporation was organized by the Amalgamated Clothing Workers of America on the initiative of its president, Sidney Hillman. Incorporated with a capitalization of \$1,000,000, the RAIC sold stock at \$10 a share. It worked jointly with the Supreme Council of National Economy of Soviet Russia in operating 19 clothing factories in Moscow, an equal number in Petrograd (later renamed Leningrad), and eight in Kazan.
44. Soviet Russia, December 1922.
45. Americans involved in the Kuzbas project included the former general secretary of the Industrial Workers of the World (IWW), William D. ("Big Bill") Haywood, and Bill Shatoff, a leading member of the organization.
46. In 1927, Maurer was a member of the First Trade Union Delegation to the USSR. Among others in the group were Paul H. Douglas (later U.S. Senator from Illinois), Rexford Guy Tugwell, and Robert W. Dunn.
47. New York Times, July 2, 1923.
48. The Nation, January 3, 1923.

49. New York Times, July 2, 1923.
50. Soviet Russia Pictorial, July 1923.
51. Steinmetz's name is not included in this volume. However, he won the doubtful distinction of being listed in another lunatic-fringe volume, The Red Network (1934). Among other "reds" identified by the author were Roger Baldwin, Felix Frankfurter, Albert Einstein, and Mahatma Gandhi.
52. Hammond, pp. 19, 20.
53. A. A. Heller (1874-1962) was a successful businessman and a longtime friend of the USSR. He assisted financially in the establishment of International Publishers in 1924, and for a number of years took an active part in its operations. Memorial tributes by Otto Nathan appeared in the National Guardian of October 8, 1962, and by Arnold Johnson in The Worker of November 6, 1962.
54. In the preface to his book, Heller thanked A. C. Freeman for assistance in the preparation of the volume. A. C. Freeman was the pseudonym of William Henry Chamberlin, one-time correspondent of the Christian Science Monitor. In his autobiography, Confessions of an Individualist (Macmillan, 1940), Chamberlin boasted that he wrote under his own byline for his employers, and as "A. C. Freeman" for radical publications. Chamberlin capped his journalistic career with his anti-Soviet Russia's Iron Age and as a columnist for both the Wall Street Journal and the New Leader. He died in 1969.
55. "The Place of Religion in Modern Scientific Civilization." Address delivered by Steinmetz on Laymen's Sunday, November 5, 1922, in All Souls' Church, Schenectady. Issued as Bulletin No. 11 by the Unitarian Laymen's League, 7 Park Square, Boston 11, Massachusetts.
56. Claessens, pp. 13, 14.
57. New York Times, October 22, 1923.
58. New York Times, November 1, 1923.

59. New York Times, November 1, 1923.
60. New York Times, October 29, 1923.
61. Vladimir Karapetoff (1876-1948) was Professor of Electrical Engineering, Cornell University. Born in St. Petersburg, he was sent to the U.S. by the Tsarist government as an engineering apprentice, and remained in this country. Prior to joining the Cornell faculty he was employed by the Westinghouse Electric Company. Like Steinmetz, he invented many electrical devices. Karapetoff was a prominent member of the Socialist Party and a consultant to many industrial corporations. He wrote a number of books on electrical engineering and a volume of poetry. He developed a cello with five strings and gave many piano recitals throughout the U.S. Karapetoff became totally blind in 1943, but continued his scientific activities until his death five years later.
62. Cornell Daily Sun, October 29, 1923.
63. New York Times, November 1, 1923.
64. New York Times, October 27, 1923.
65. Interview with Joseph Hayden, Schenectady, Oct. 21, 1976.
66. GE News, April 16, 1965.
67. Interview with Cecelia Rhein, Schenectady, October 21, 1976.
68. Telephone conversation with Cecelia Rhein, November 30, 1976.
69. Albany Evening News, December 14, 1925.
70. New York Times, February 19, 1967.
71. Annual Report of the General Electric Company, 1923.
72. "Steinmetz was the most valuable piece of apparatus General Electric had until he wore out and died." --John Dos Passos, U.S.A. 1 (in The 42d Parallel, p. 325).
73. Matles and Higgins, Them and Us, pp. 82, 83.

SELECTED BIBLIOGRAPHY

- Anikeyev, V. V., and Solovyov, A. A., eds. Lenin Through the Eyes of the World. Translated by K. M. Cook. Moscow: Progress Publishers, 1969.
- Annual Report, 1923. General Electric Company, Schenectady, N. Y. December 31, 1923.
- Annual Reports of the Commissioner of Patents. U.S. Government Printing Office, Washington, D. C., (1900-1923).
- Bailey, Thomas A., and Ryan, Paul B. The Lusitania Disaster: An Episode in Modern Warfare and Diplomacy. New York: Macmillan, 1975.
- Bibber, Harold W. Charles Proteus Steinmetz. Union Worthies No. 20. Schenectady, N.Y.: Union College, 1965.
- Bloor, Ella Reeve. We Are Many: An Autobiography. With an Introduction by Elizabeth Gurley Flynn. New York: International Publishers, 1940.
- Broderick, John F. Steinmetz and His Discoverer. Schenectady, N.Y.: Robson & Adey, 1924.
- _____. Forty Years With General Electric. Albany, N.Y.: Fort Orange Press, 1928.
- Caldecott, Ernest, and Alger, Philip L., eds. Steinmetz the Philosopher. Schenectady, N.Y.: Mohawk Development Services, 1966.
- Claessens, August. Didn't We Have Fun! Stories Out of a Long, Fruitful and Merry Life. New York: Rand School Press, 1953.
- Coleman, McAlister. Pioneers of Freedom. New York: Vanguard Press, 1929.
- Egbert, Donald Drew, and Persons, Stow. Socialism and American Life, Vol. 2. Princeton, N.J.: Princeton University Press, 1952.
- Dos Passos, John. USA I (The 42nd Parallel). New York: The Modern Library, 1939.

- Forcey, Charles. The Crossroads of Liberalism: Croly, Weyl, Lippmann and the Progressive Era. New York: Oxford University Press, 1961.
- Hammond, J. W. Charles Proteus Steinmetz. New York: Century, 1924.
- Hart, Larry. Schenectady and the Golden Era, 1890-1930. Scotia, N.Y.: Old Drop Books, 1974.
- Heller, A. A. The Industrial Revival in Soviet Russia. With an Introduction by Charles P. Steinmetz. New York: Thomas Seltzer, 1922.
- Hendrickson, K. E., Jr. George R. Lunn and the Socialist Era in Schenectady, N.Y., 1909-1916. New York State Historical Association Proceedings, Vol. 64, 1916.
- Hillquit, Morris. Loose Leaves from a Busy Life. New York: Macmillan, 1934.
- Hoeling, Adolph A., and Hoeling, Mary. The Last Voyage of the Lusitania. New York: Henry Holt, 1956.
- Johnson, Walter, ed. Selected Letters of William Allen White. New York: Henry Holt, 1947.
- La Follette, Bella Case, and La Follette, Fola. La Follette. 2 vols. New York: Macmillan, 1953.
- Lazarus, Louis. References on Steinmetz in the Socialist Literature. At Tamiment Institute Library (NYU).
- Lenin, V. I. Collected Works, Vol. 31. Moscow: Progress Publishers, 1966.
- _____. Collected Works, Vol. 35. Moscow: Progress Publishers, 1966.
- _____. Collected Works, Vol. 45. Moscow: Progress Publishers, 1970.
- _____. Lenin on the United States: Selected Writings. New York: International Publishers, 1970.
- Lippmann, Walter. A Preface to Politics. New York and London: Michell Kennerley, 1913.

_____. "Harvard in Politics: A Problem in Im-
perceptibles." Harvard Monthly, XLIX, December
1909.

Mason, Daniel; Smith, Jessica; and Laibman, David, eds.
Lenin's Impact on the U.S. New York: NWR Pub-
lications, 1970.

Matles, James J. and Higgins, James. Them and Us:
Struggles of a Rank-and-File Union. Englewood
Cliffs, N.J.: Prentice-Hall, 1974.

Mitman, Carl W. Dictionary of American Biography.
New York: Charles Scribners, 1935.

Morris, Richard B., ed. Encyclopedia of American
History. New York: Harper & Row, 1976.

Simpson, Colin. The Lusitania. Boston: Little, Brown,
1972.

State of New York: Proceedings of the Judiciary Com-
mittee of the Assembly. (Lusk Report). "In the Matter
of the Investigation by the Assembly of the State of
New York as to the Qualifications of Louis Waldman,
August Claessens, Samuel Orr and Charles Solomon,
to Retain Their Seats in Said Body." 3 vols. Albany,
New York: J. B. Lyon Company, 1920.

Whitney, R. M. Reds in America. New York: Berkwith
Press, 1924.

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